

Simulation

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السلامة

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To learn from previous lecture

- Causal loop Diagram "CLD"
- Stock Flow Model. ← still not known
- sensitivity analysis ← today

* Problem: the difference between desired state and actual state. any problem has initial conditions.

* Some solutions require time to show results, these are long term solution. "fundamental solution"

* differentiate between the problem and its symptoms
ظواهر المشكلة

* quick solution usually solves the symptoms.

* problem characteristics:-

- 1- Can the problem be decomposed or not?
- 2- does the solution steps accept UNDO?
- 3- is the solution relative or absolute?
(Relative) - المشاكل النسبية هي التي تتغير مع الظروف (Relative)
- 4- is the Solution a path or a state
- 5- is the environment of problem and solution predictable or not?
- 6- does knowledge play a role in the solution or not?
- 7- what is the role of the human?

* Some things are semi-structured, you can't know for sure if knowledge plays a role or not. And the importance of knowledge differ for e.g. chess vs. puzzle

* Loops can be reinforced or balanced

- reinforced loops contradict with Limit of Growth principle. There is always a side effect that balances the Loop.

* in CLD, if negative parts are odd, the loop is balanced, else \Rightarrow reinforced loop.

* if what causes decrease is more dominant than what reinforces, the system collapse.

* Sensitivity Analysis helps determine the dominant causes in a model of a problem.

#80-20 rule:

80% of a problem is solved by solving
20% of causes